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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,559	07/30/2003	Tetsuya Nagata	501.42964X00	6532
20457	7590	01/25/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889			TON, MINH TOAN T	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicant(s) 10/629,559	Applicant(s) NAGATA ET AL.	
	Examiner Toan Ton	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on papers filed 11/02/04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,9,10,14 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,11-13,15-17 ~~and 18~~ is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Objections

1. Claim 1 is objected to because of the following informalities: “between the silicon film and the substrate and between the pixel electrode and the substrate, a silicon oxide film and a silicon nitride film which is formed between the silicon oxide film and the substrate are interposed” should be changed to -- between the silicon film and the substrate and between the pixel electrode and the substrate, a silicon oxide film and a silicon nitride film are formed; the silicon nitride film is formed between the silicon oxide film and the substrate-- .

Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim 16. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1, 4-8, 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al (US 6372558) in view of Morosawa et al (JP 06-132306, IDS reference).

Yamanaka discloses an active matrix liquid crystal display (LCD) device comprising (see at least Figure 6, 14): thin film transistors and pixel electrodes formed on a substrate being characterized in that each thin film transistor includes a silicon film, a gate electrode, and a source electrode which is electrically connected to the pixel electrode; between the silicon film and the substrate and between the pixel electrode and the substrate, a silicon oxide film and a silicon nitride film are formed, wherein the silicon nitride (SiN) film is formed between the silicon oxide film and the substrate (see at least col. 12, last paragraph to col. 13, first paragraph).

Yamanaka discloses the followings: in order to prevent diffusions of Na ions from the glass substrate, a silicon nitride film (a thickness of 50-200 nm, overlapping Applicant's range of 130-160 nm and 126-165 nm) and a silicon oxide film (a thickness of 100 nm which is at least smaller upper range of SiN) are formed on the surface of the substrate. Also, Morosawa discloses (see at least Figure 2) a silicon oxide film (a thickness of 1000 Angstroms) and a silicon nitride film formed on the surface of the substrate (a thickness of 1000-4000A, larger than 1000 Angstroms, overlapping Applicant's range of 130-160 nm and 126-165 nm) for advantages such as achieving excellent quality for the silicon film. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a silicon nitride film and a silicon oxide formed on the surface of the substrate for advantages such as preventing diffusions of Na ions from the glass substrate, achieving excellent quality for the silicon film.

Yamanaka discloses (see at least Figure 6, 14) a gate insulation film 12 formed between the silicon layer and the gate electrode, and an interlayer film (comprising a first interlayer

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insulation film 25 and a second interlayer insulating film 36) arranged close to the gate insulation film interposed between the gate insulation film and the pixel electrode (29/41). Further, Yamanaka discloses (see at least Figure 6, 14) a second interlayer insulation film 36 formed between the first interlayer insulation film and the pixel electrode.

Yamanaka discloses the gate insulation film and the first interlayer insulation film made of a same material (SiO).

Yamanaka discloses (see at least Figure 14) the pixel electrode made of ITO (light-transmissive) and an organic film 28b (resin) formed between the pixel electrode and the substrate.

Yamanaka discloses counter electrode 31 formed on a counter substrate which faces the transparent substrate in an opposed manner.

The use of an IPS type LCD device is known in the art for providing advantages such as large viewing angle due to at least the formation of the pixel electrode and the common electrode formed on the same substrate with an insulation (organic) film therebetween. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ an IPS type LCD device for achieving advantages such as large viewing angle.

4. Claims 11-12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka and Morosawa as applied to claims 1, 4-8, 13, 15 and 17 above, and further in view of Baek (US 6657689).

In general, a liquid crystal display (LCD) is classified as a transmission type and a reflection type depending on implementing an internal or external light source. The transmission type uses a backlight; and the reflection type comprises uses ambient light. However, the transmission type LCD comprises problems such as high power consumption, and the reflection type LCD comprises problems such as low visibility in dark environment (see Baek, at least in background of the invention)

These problems are solved through the use of a transflective type LCD device, wherein this type of LCD device realizes both a transmissive mode display and a reflective mode display (see at least Figure 2: the pixel electrode includes a reflective electrode and a light-transmissive electrode, a distance from the substrate to the reflective electrode is different from the a distance from the substrate to the light-transmissive electrode; an insulator is formed between the reflective electrode and a substrate; a backlight is formed outside the substrate). Therefore, it would have been at least obvious to one of ordinary skill in the art to employ a transflective display mode for achieving advantages such as bright ambient light and low power consumption (see Baek, at least in background of the invention).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US ('841) discloses insulating layers (13, 13') formed adjacent to an active matrix substrate.

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Election/Restriction

6. An election of Group II directing to claims 4-5 is acknowledged. The invention of Group I is patentably distinct from the invention of Group II, it is believed that proper reasons have been given the election/restriction requirement. Thus, claims 1, 4-8, 11-13, 15-17 and 19 are being examined and nonelected claims 2-3, 9-10, 14 and 18 have been withdrawn from consideration.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan Ton whose telephone number is (571) 272-2303.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 21, 2005


TOANTON
PRIMARY EXAMINER